

### **REMARKS**

Claims 1-4, 8-11, 68 and 79-87 are pending. Claims 1, 4, 68 and 80 have been amended but do not result in a change in claim scope. The brief description of Figure 1 has been amended to comply with the Examiner's request to provide a description of the reference signs. New claim 88 has been added. Support for the claim amendments as well as the newly added claim can be found on page 14 and in the claims as originally filed. No new matter has been added.

### **Drawing Objections**

The Examiner objects to the drawings as failing to comply with 37 CFR 1.84(p)(5) and requests a proposed drawing correction, corrected drawing or an amendment to the specification to include the reference signs the Examiner alleges are not mentioned in the description. Although the reference signs are described on page 37 of the description, the specification is amended herewith to include a description of the reference signs for Figure 1 in the Brief Description of the Drawings.

Accordingly, Applicants respectfully request the Examiner withdraw the objection to the drawing in light of the above.

### **Claim Objections**

The Examiner objects to claims 1 and 4 for informalities. While not conceding the accuracy of the Examiner's objections, Applicants have amended the claims as suggested in order to expedite prosecution of the instant application.

Based on the amendments of claims 1 and 4 as requested by the Examiner, Applicants respectfully request the Examiner withdraw the objection to these claims.

### **Claim Rejections – 35 USC § 112**

Claims 1, 8 and 10 are rejected under 35 USC § 112, second paragraph "as being indefinite for failing to particularly point and distinctly claim the subject matter which applicant regards as the invention." The Examiner bases this rejection on two reasons. First, the Examiner

maintains that the claim is indefinite for the recitation of “under stringent conditions”. Second, the Examiner states that claim 1 includes a self-reference in subpart (b).

Applicants have amended claim 1 to recite specific stringency conditions. Support for this set of highly stringent conditions is provided on page 14, lines 12-16 of Applicants’ disclosure. Additionally, correction of the circular self-reference in subpart (b) in claim 1 has already been addressed above in response to the objections to claim 1 for informalities, thereby obviating this rejection.

Additionally, the amendment of independent claim 1 is sufficient to overcome the rejection of dependent claims 8 and 10.

Based on the foregoing, the Examiner is respectfully requested to withdraw the rejection of claims 1, 8 and 10 under 35 USC § 112, second paragraph.

Claims 4, 9, 11, 79, 80, 81, 84, 85, 86, and 87 are rejected under 35 USC § 112, second paragraph as being “indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.” The Examiner maintains that the basis for this rejection is that the definition provided in the specification for the unique sequences of the claims, namely that they exclude “other previously published sequences of the filing date of this application” is indefinite. As Applicants have not identified these sequences, the Examiner asserts that one of ordinary skill in the art would not know which sequences Applicants considers “previously published”.

Applicants respectfully traverse the Examiner’s rejection on these grounds. One of ordinary skill in the art is extremely familiar with publications that provide sequence information. One of ordinary skill in the art is also able to determine whether or not a publication was published before the filing date of the instant application and, thereby, determine which sequences are excluded from the scope of these claims. It is self-explanatory that sequences that are fragments of SEQ ID NO: 1 and presented in a publication that pre-dates the filing date of the instant application are not within the scope of these claims. It is also sufficiently clear that sequences that are fragments of SEQ ID NO: 1 and not presented in a publication that pre-dates the filing date of the instant application are encompassed by the claims. As it is clear to one of ordinary skill in the art what fragments fall within the scope of the claims, Applicants maintain that the metes and bounds of the claims can be determined.

Based on the above arguments, Applicants respectfully request that the Examiner withdraw his rejection of claims 4, 9, 11, 79, 80, 81, 84, 85, 86, and 87 under 35 USC § 112, second paragraph.

The Examiner has rejected claim 68 under 35 USC § 112, second paragraph as being “indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.” The Examiner maintains that the scope of the claim is unclear as it is not apparent as to what constitutes a MIVR-1 nucleic acid.

Applicants have amended claim 68 and added new claim 88 for clarification purposes to more clearly indicate that a MIVR-1 nucleic acid molecule encompasses nucleic acid molecules that are capable of hybridizing to SEQ ID NO: 1 under highly stringent conditions, degenerates and complements as well as fragments thereof.

Based on the amendment of claim 68, Applicants respectfully request that the Examiner withdraw the rejection of claim 68 under 35 USC § 112, second paragraph for being indefinite.

The Examiner has rejected claims 1, 2, 3, 8, 10, 82 and 83 under 35 USC § 112, first paragraph as being not sufficiently enabled so that one of ordinary skill in the art is able to make and/or use the claimed invention. It is argued that it is not the nucleic acids that hybridize to SEQ ID NO: 1 that encode a MIVR-1 polypeptide but rather the nucleic acids that hybridize to the complement of SEQ ID NO: 1.

Although not conceding the validity of Examiner’s rejection on this basis, Applicants have amended claim 1 as suggested by the Examiner to expedite the prosecution of the Application. The amendment of independent claim 1 is also sufficient to overcome the rejection of dependent claims 2, 3, 8, 10, 82 and 83.

Based on the above amendment, the Examiner is respectfully requested to withdraw the rejection of claims 1, 2, 3, 8, 10, 82 and 83 under 35 USC § 112, first paragraph.

Claims 3 and 83 are rejected under 35 USC § 112, first paragraph as containing subject matter not described in a way as to reasonably convey to one of ordinary skill in the art that Applicants had possession of the claimed invention at the time of filing the instant application.

The Examiner argues that the Applicants must provide some characteristic other than function of or a process of making the nucleotides that fall within the scope of the claim.

Applicants respectfully traverse the Examiner's rejection of claims 3 and 83 on this basis as the structure of the nucleic acids of the claims is clearly provided and a process for making the nucleic acids is readily apparent to one of ordinary skill in the art based on the knowledge of one of ordinary skill in the art and the guidance provided in the specification. The structure of the nucleic acid sequences are clearly defined as having the sequence of SEQ ID NO: 3 or a fragment thereof. Providing the nucleic acid sequence of SEQ ID NO: 3 necessarily provides the structure of the fragments of the sequence. Additionally, notwithstanding the plain meaning of the claim, the specification provides the methodology that would be used for determining each and every fragment of the sequence. This is thoroughly described on page 16, especially lines 30-33. Applicants' disclosure further teaches that SEQ ID NO: 3 and its fragments have anti-apoptotic activity. This can be easily confirmed using routine methods known in the art or provided by Applicants' disclosure (e.g., Applicants' adapted TUNEL assay described on page 72). One of ordinary skill in the art, therefore, would not only readily recognize what a nucleic acid of SEQ ID NO: 3 or a fragment thereof is but also the process for making these nucleic acids that can include testing for the desired activity.

Because one of ordinary skill in the art is provided not only with the structure of the nucleic acids of the claims through the teaching of SEQ ID NO: 3 but also the process for making them, one of ordinary skill in the art would clearly recognize that Applicants did indeed have possession of the claimed invention at the time of filing the instant application.

Based on the above arguments, the Examiner is respectfully requested to withdraw the rejection of claims 3 and 83 under 35 USC § 112, first paragraph.

The Examiner has rejected claims 1-3, 8, 10, 11, 82 and 83 under 35 USC § 112, first paragraph as not being sufficiently enabled to allow one of ordinary skill in the art to make and/or use the claimed invention. The Examiner bases this rejection on a few references (Barnes et al., Tang et al., and Xu et al.) that have not been able to ascribe a function to proteins related to Applicants' MIVR-1 or have ascribed a function to the related proteins that

is inconsistent with the function asserted by the Applicants. The Examiner concludes that without further guidance or evidence of the function of MIVR-1 the claims are not enabled.

Applicants respectfully traverse the Examiner's rejection. Applicants teach that MIVR-1 and fragments thereof have anti-apoptotic activity. The Examiner has no reason to doubt Applicants' assertion of the function they have ascribed to MIVR-1. That the references cited by the Examiner do not ascribe a function to proteins with some homology to MIVR-1 or ascribe a different function is not a basis to doubt the validity of Applicants' teachings. These references in no way teach that MIVR-1 does not have anti-apoptotic activity as taught by the Applicants. At best, these references serve to illustrate the novelty and utility of Applicants' teachings as others in the art have not made the important discoveries Applicants have been able to do.

The Examiner further argues that even if Applicants enable the full length protein, Applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and/or use the fragments of the full-length protein as claimed. Applicants respectfully disagree.

The standard for enablement is whether undue experimentation would be required for one of ordinary skill in the art to practice the claimed invention. An analysis of the factors set forth in In re Wands provides a determination of whether experimentation is undue. In re Wands, 858 F.2d 731, 8 USPQ2d 1400 (Fed. Cir. 1988). The Examiner has not analyzed each one of the eight factors provided by In re Wands in order to reach the present conclusion. The Applicants assert that based on the arguments below, experimentation is not undue.

Applicants maintain that one of ordinary skill in the art is sufficiently enabled to make and use the fragments of the claims. Only routine experimentation is needed to make fragments of SEQ ID NO: 3, make the polypeptide encoded by such fragments and test the polypeptides for anti-apoptotic activity. The level of skill in the art has an important effect on the amount of guidance which must be provided to enable the invention. As the court stated in In re Howarth, "[i]n exchange for the patent, [the applicant] must enable others to practice his invention. An inventor need not, however, explain every detail since he is speaking to those skilled in the art." In re Howarth, 654 F.2d 103, 105 (C.C.P.A. 1981). Thus the level of knowledge of one of ordinary skill in the art cannot be ignored in the Wands factor analysis. For the relevant art of

cell biology and molecular biology, the level of skill is high. Applicants maintain that the person of ordinary skill in the art of cell biology and molecular biology would know how to make fragments of SEQ ID NO: 3 and the polypeptides they encode and test them for anti-apoptotic activity. In the Wands case, for example, the court's decision turned on the "high level of skill in the art at the time the application was filed", and that "all of the methods needed to practice the invention were known." Wands at 740, 8 U.S.P.Q.2d at 1406. Applicants maintain that the same conclusions with respect to the state of the art and the level of skill in the art are true in the instant case, and therefore must weigh heavily in favor of a finding that undue experimentation is not required.

Applicants also maintain that one of ordinary skill in the art is sufficiently enabled based on the guidance provided in the instant specification. The specification provides not only SEQ ID NO: 3 but also the methodology for determining each and every fragment of the sequence (see page 16, especially lines 30-33). Applicants' disclosure further teaches that the MIVR-1 polypeptides of the invention can be recombinantly produced (see page 29), methods of which are well known in the art. Applicants' disclosure further teaches assays for determining the anti-apoptotic activity of the polypeptides encoded by the nucleic acid fragments of the claims (e.g., TdT-mediated biotin-dUDP nick-end labeling (TUNEL) staining, and the use of electron micrographs to observe the appearance of condensed chromatin and other morphological features characteristic of apoptosis, see page 11 and Examples). Additional methods are also known by those of ordinary skill in the art.

Furthermore, as the Examiner knows, Applicants need not provide working examples if the invention is otherwise disclosed in a manner such that one of skill in the art would be able to practice the invention without undue experimentation. Applicants maintain that, with the guidance provided as well as the level of skill in the art, this is the case.

Based on the above arguments, the Examiner is respectfully requested to withdraw the rejection of claims 1-3, 8, 10, 11, 82 and 83 under 35 USC § 112, first paragraph as not being sufficiently enabled.

Claims 4, 9, 11, 79, 80, 81, and 84-87 are rejected under 35 USC § 112, first paragraph as not being described in such a way as to reasonably convey that Applicants were in

possession of the claimed invention at the time of filing the instant application. The Examiner rejects these claims as lacking sufficient written description as the nucleic acids must be identified by some characteristic other than function. The Examiner argues that Applicants only generally describe what is encompassed by the term “unique fragment”, but has done so in a way that merely implies a function rather than a structural characteristic.

Applicants respectfully traverse the Examiner’s rejection of these claims. Firstly the Applicants maintain that the recitation that those of skill in the art could easily determine if a fragment is unique does not imply a function of the fragment but rather indicates that one of ordinary skill in the art would easily recognize what fragments are ultimately encompassed by the claims. This was addressed above regarding the meaning of “previously published”. It is clear to one of ordinary skill in the art that the sequence of a fragment of SEQ ID NO: 1 is unique if it is not found in a reference published prior to the filing date of the instant application. Therefore, the statement that one of skill in the art is able to determine whether a fragment is unique with only routine methods known in the art speaks to the ease with which one of ordinary skill in the art can determine if a sequence falls within the scope of the rejected claims and does not negate the sufficient structural characteristics provided.

Applicants maintain that disclosing SEQ ID NO: 1 provides the structure sufficient to characterize the nucleic acids of the claims. As argued above, providing the sequence of a nucleic acid necessarily provides the structure of the full-length nucleic acid as well as all fragments of the full-length molecule. Furthermore, the specification clearly defines each and every fragment of a nucleic acid sequence (see page 16, lines 30-33), thus eliminating any ambiguity with respect to the structure of all fragments.

The Examiner also argues that the specification lacks written description for “unique sequences” as the nucleic acids disclosed share some homology with other human DNA sequences (e.g., Xu et al.). Applicants maintain that this argument misses the mark. Applicants note that based on the clear description that the fragments that fall within the scope of the pending claims must be unique, any portion of a sequence (that is identical to the sequence of MIVR-1) found in a publication the pre-dates the priority date of the instant application is specifically excluded by Applicants’ claims. Applicants maintain that the use of

the term “unique” and its description in the specification is sufficient to allow one of ordinary skill in the art to recognize Applicants’ possession of the nucleic acids of the claims.

Based on the above arguments, the Examiner is respectfully requested to withdraw the rejection of claims 4, 9, 11, 79, 80, 81, and 84-87 under 35 USC § 112, first paragraph.

**Claim Rejections – 35 USC § 102**

Claim 1 is rejected under 35 USC § 102(a) as being anticipated by Tang et al. or Xu et al. The Examiner maintains that Tang et al. and Xu et al. each disclose a nucleic acid molecule which would specifically hybridize to the complement of SEQ ID NO: 1 under stringent conditions.

Applicants maintain that as claim 1 has been amended to require highly stringent conditions, the sequences disclosed by Tang et al. and Xu et al. no longer fall within the scope of the claim.

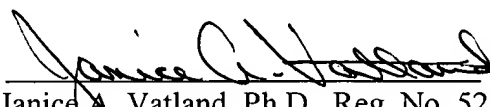
Accordingly, the Examiner is respectfully requested to withdraw the rejection of claim 1 under 35 USC § 102(a).



**CONCLUSION**

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' representative at the telephone number listed below.

Respectfully submitted,  
*Porcelli et al., Applicants*

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